PDB131

UNITS AND COSTS PER DAY PER CLAIM OF COMPARABLE INSULINS SUPPLIED TO MEDICAID PATIENTS

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OBJECTIVES: To compare units per day per claim (units) and costs per day per claim (costs) of comparable insulin products by Eli Lilly and Company (LLY) and Novo Nordisk (NN), adjusting for baseline patient differences, in state Medicaid claims data. **METHODS:** Claims for comparable LLY or NN insulin for patients with continuous coverage for ≥6 months before their first observed insulin claim (baseline) were identified from Missouri (MO: 1/1/2011-3/31/2012) and New Jersey (NJ: 1/1/2011-3/31/2013) de-identified Medicaid claims data. Units were calculated by multiplying total quantity per claim (in mL) by strength (1 mL=100 units) and dividing by total days supplied. Costs were calculated (for patients aged <65 years only, because drug costs for those aged ≥65 years are often covered by Medicare rather than Medicaid) by dividing the cost of a claim to insurers by total days supplied. Regression-adjusted units and costs were estimated using generalized estimating equation models, accounting for baseline demographics, select comorbidities, and antidiabetic medication use. **RESULTS:** Claims for 23,325 MO and 9,749 NJ Medicaid patients were analyzed. Compared with NN insulin users, LLY insulin users were significantly younger, had lower rates of comorbidities, and higher rate of baseline insulin use. The regression-adjusted units for all comparable LLY and NN insulins were similar, with the exception of significantly lower units for insulin lispro (MO only: 67.6 vs. 73.2, P=0.0009) and LLY human insulin regular vials (MO: 65.4 vs. 78.3, P<0.0001; NJ: 45.3 vs. 50.3, P=0.0365). The regression-adjusted overall cost was significantly lower for comparable LLY vs. NN insulin (MO: $5.7 vs. $6.1, P=0.0046; NJ: $4.6 vs. $5.5, P<0.0001). **CONCLUSIONS:** In both MO and NJ Medicaid, the units of comparable LLY and NN insulins in years evaluated were similar for patients with similar characteristics; however, the overall cost was significantly lower for comparable LLY vs. NN insulin.

PDB132

EXPENDITURE AND UTILIZATION TRENDS OF THE ANTIDIABETIC AGENTS IN QATAR (2007-2012)

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OBJECTIVES: In Qatar, over 20% of the population has diabetes. While this is considerable and is associated with a high consumption of antidiabetic drugs, there does not seem to be any published reports discussing the utilization and expenditure of antidiabetics in Qatar. This project sought to assess the trends of utilization and expenditure of antidiabetic drugs at Hamad Medical Corporation (HMC), the major health provider in Qatar, over time. **METHODS:** The study was from the HMC perspective, retrospectively obtaining antidiabetics utilization and expenditure data from HMC drug utilization database (2007-2012). Defined Daily Doses were used as the utilization unit. Data were organized according to drug, drug concentration, drug class, hospital, and year. Descriptive statistics were used to illustrate distributions of variables, and cross-tabulation was used to provide comparison of frequency data, used to generate data tables and charts as appropriate. **RESULTS:** The utilization and expenditure of antidiabetic drugs increased over time. The increase in utilization seems to have been consistent with the increase in population. The expenditure trend however, is considerably higher. Sulfonylurea and biguanide drug classes were utilized the most, whereas Dipeptidylpeptidase-inhibitors were associated with the highest expenditure. Out of eight hospitals in HMC, Hamad General was the hospital that utilized drugs the most. This was consistent with antidiabetics expenditures at the different hospitals Of combination therapies in use, rapid-acting and intermediate-acting insulin combination was increasingly the most utilized. **CONCLUSIONS:** Expenditure trends are considerably over the increasing utilization and population trends, possibly indicating that the cost of drugs is not a priority consideration in drug selection and formulary inclusion at HMC.

PDB133

TREND OF THE UTILIZATION AND COST OF PRESCRIPTION MEDICATIONS AMONG DIABETES PATIENTS IN THE UNITED STATES: 1987 TO 2010

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OBJECTIVES: Management of A1c (A), blood pressure (B) and cholesterol (C) levels is essential to reduce the risk of diabetic complications. In the past two decades, the results of landmark trials have led to increasingly aggressive treatment regimens and thus more intensive use of glucose-lowering, anti-hypertensive and lipid-lowering medications for patients. We examined the trends of the use and cost of the three types of drugs among diabetes patients in the U.S. between 1987 and 2010. **METHODS:** Using the 1987 National Medical Expenditure Survey (n=22538), and the Medical Expenditure Panel Survey in years 1997-98 (n=57652) and 2009-10 (n=44815), we estimated the utilization and expenditures of ABC-control-related prescription medications among self-reported diabetes patients at the 3 time points. Within each drug type, usage was measured by the number of medication classes patients received, the share of each class and the total number of prescription medication encounters. Cost was measured by the payments from all payers, and presented in 2012 dollars. **RESULTS:** Between 1987 and 2010, the number of glucose-lowering encounters per patient nearly doubled. Patients used more varied classes. Usage of insulins and sulfonylureas declined from 38.7% and 67% to 29.9% and 35% respectively; Usage of initially unavailable medication classes – metformin, thiazolidinediones and DPP-4 inhibitors – increased to 59.2%, 14.5% and 9.5%, respectively, in 2010. The patients that received ≥2 classes of glucose-lowering medications increased from 6% to 44%. Similar trends were observed for the other two drug types. The annual medical spending on glucose-lowering, anti-hypertensive and lipid-lowering drugs increased from $131 to $1,009, $62 to $647 and $146 to $449, respectively. **CONCLUSIONS:** Usage and cost of medications for ABC control among diabetes patients increased substantially in the past two decades. Future studies may consider the impact of these increases on adherence and long-term outcomes.

PDB134

THE IMPACT OF MEDICARE PART D ON DIABETES DRUG USE AND EXPENDITURES

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OBJECTIVES: To determine the extent to which Medicare Part D affect diabetes drug use and expenditures among different racial groups in the United States. **METHODS:** The Medical Expenditure Panel Survey data files from 2001 to 2010 were used to examine changes in diabetes drug use and out-of-pocket expenditures after Part D implementation. I employ Difference-in-Difference (DD) methodology to compare racial differences in diabetes drug use and expenditures before and after 2006 for diabetic seniors who are covered by Part D. In other words, I compare people 65 years of age and older before and after Medicare Part D implementation to find the extent to which average diabetes drug use and expenditures have changed. **RESULTS:** The results demonstrate that after Part D implementation diabetes drug expenditures significantly decreased for all senior participants on average by $199, and average diabetes drugs filled during the year increased by 0.2 but was not significant. Although the results show that overall diabetes drug expenditures significantly decreased for minorities by $159, DD estimates show that Part D increases diabetes drug expenditures and decreases average diabetes drug use among minorities 65 years of age and older compared to whites by $42. **CONCLUSIONS:** The findings demonstrate that Medicare Part D significantly reduces out-of-pocket expenditures and increases diabetes drug use, however, African-Americans and Hispanics do not benefit from this reduction. In other words, Part D did not reduce racial disparities in diabetes drug expenditures. Additionally, Part D did not have any significant effect on diabetes drug use.

PDB135

CLINICAL AND DEMOGRAPHIC CHARACTERISTICS OF PEOPLE WITH TYPE 2 DIABETES MELLITUS (T2DM) INITIATING CANAGLIFLOZIN FROM A UNITED STATES MANAGED CARE SAMPLE

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OBJECTIVES: Canagliflozin (CANA) is the first sodium glucose co-transporter 2 inhibitor to be approved to treat adults with T2DM in the US. This study describes the early prescription pattern of patients receiving CANA in routine clinical practice. Clinical and demographic characteristics as well as treatment history are summarized. **METHODS:** This retrospective cohort study used data from a large US health plan for commercial and Medicare Advantage enrollees with T2DM filling a prescription for CANA between market entry on April 1 and June 30, 2013. Analysis included demographics, first observed dosage, prescribing specialty, antihyperglycemic agents (AHAs) preceding a CANA prescription, and A1C level proximal to initiation, where available. The diabetes complications severity index (DCSI) was used to capture baseline health status. **RESULTS:** In this sample of patients receiving CANA (n=1088), 44% were female, geographically skewing toward the South (62%). The average age was 56 years. Approximately 48%, 30%, 5% of CANA prescriptions could be attributed to primary care physicians, endocrinologists, and other specialties, respectively, with the remainder unknown. The most common CANA dose was 100mg (71%). The mean (SD) number of other T2DM drug classes at baseline was 1.66(1.10) with oral AHA (41%) and GLP-1 (17%) being the most common pre-treatment monotherapies and oral AHA or GLP-1 plus insulin (31%) the most common pre-treatment dual therapy. For patients with available lab data (N=350), 32% had baseline A1C >9%, 38% had 7.5 to ≤9%, 20% had 6.5 to <7.5%, and 10% had <6.5%. The mean (SD) DCSI was 0.75(1.11); 56% had a zero DCSI value at baseline. **CONCLUSIONS:** This study characterizes patients treated in routine clinical practice immediately after CANA became available in the US. This early prescription pattern indicates CANA was prescribed by primary care physicians and endocrinologists across a range of A1C levels and following a variety of AHAs.

PDB136

MEDICATION USE AND TREATMENT PATTERNS OF GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONIST THERAPY IN TYPE 2 DIABETES MELLITUS

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OBJECTIVES: To compare medication use and treatment patterns of glucagon-like peptide-1 receptor agonists (GLP-1RAs) among type 2 diabetes mellitus (T2DM) patients newly initiating exenatide once weekly (exenatide QW), exenatide twice daily (exenatide), or liraglutide. **METHODS:** This administrative claims-based retrospective cohort study included patients if they had T2DM, were GLP-1RA-naïve, initiated a GLP-1RA between 2/1/2012-1/31/2013 (initiation date=index), were aged ≥18 years, and had continuous enrollment for 12 months before (baseline) to 6 months after index (follow-up). Outcomes included index GLP-1RA adherence (proportion of follow-up days covered, dichotomized at ≥90% vs. <90%) and non-persistence (switch to non-index GLP-1RA or gap ≥60 days in index GLP-1RA during follow-up). Multivariable regressions (logistic for adherence, Cox proportional hazards for persistence) compared outcomes among index GLP-1RAs, adjusting for potential confounders. Pre-specified sensitivity analyses were performed stratifying by liraglutide 1.2mg and liraglutide 1.8mg and among patients with ≥60 days' supply of their index GLP-1RA within ≤67 days after index (initial adherers). **RESULTS:** Samples included 4,041 exenatide QW, 4,586 exenatide, and 14,211 liraglutide patients. Compared with other GLP-1RAs, exenatide QW had significantly higher multivariable-adjusted odd ratios of index GLP-1RA adherence in all analyses (ranging from 0.299 [p<0.001] for exenatide vs. exenatide QW among initial adherers to 0.693 [p<0.001] for liraglutide 1.2mg vs. exenatide QW among initial adherers). The multivariable-adjusted hazard ratios of index GLP-1RA non-persistence var-

ied across GLP-1RAs and analyses (ranging from 2.162 [p<0.001] for exenatide vs. exenatide QW among initial adherers, to 0.986 [p=0.798] for liraglutide 1.8mg vs. exenatide QW among initial adherers, to 0.869 [p<0.001] for liraglutide 1.8mg vs. exenatide QW among all patients). **CONCLUSIONS:** Among patients newly initiating exenatide QW, exenatide, or liraglutide, adherence was consistently highest for exenatide QW, while non-persistence varied by analyzed group.

PDB137

REVIEW OF THE USUAL TREATMENT OF ADULTS WITH TYPE 2 DIABETES IN JAPAN

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OBJECTIVES: The personal and economic burden of diabetes is substantial and growing in Japan due to its aging population. This study aimed to review the available literature on the usual treatment of adults with type 2 diabetes (T2DM) in Japan. **METHODS:** Systematic search of the scientific literature was performed on MEDLINE and EMBASE databases to identify publications about usual care of diabetes in Japan written in English or Japanese and published between January 2000 and May 2013. Included keywords were diabetes mellitus, drug therapy and Japan. Randomized clinical trials, comparative or interventional studies were excluded. Of 17 publications that met search criteria, 13 pertained to adults with T2DM, of which 9 contained original survey data and 4 were literature reviews. **RESULTS:** Almost all of the available data was at least 7 years old. Based on data from 2000 to 2002, the use of oral anti-diabetic drugs (OAD) alone was the most prevalent treatment option (51.4%), followed by diet alone (25.4%), insulin alone (15.4%), and OAD with insulin (7.8%). Although overall, sulfonylureas was the preferred class of OAD (61-67%), its use among treatment initiators has dramatically declined from 40% to 22% following the introduction of dipeptidyl peptidase-4 inhibitors (DPP4) in 2009. Since then, the prescription rate of DPP4 increased to nearly 40% due to its perceived better safety. **CONCLUSIONS:** Available data on the treatment of diabetes in usual care in Japan is rather sparse and not recent. Results indicate that the treatment of adults with T2DM in Japan with OAD and insulin is rather similar to that in the US and Europe, although the specific OAD in Japan is different. Further research is needed on the usual treatment of diabetes in Japan, considering increased longevity, lifestyle changes, ongoing introduction of new medications, changes in disease management practices and increased economic concerns.

PDB139

UNDER-DIAGNOSIS OF TYPE II DIABETES AMONG CHILEAN ADULT MEN: AN URGENT EQUITY ISSUE

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OBJECTIVES: Type II Diabetes Mellitus (DM) is exponentially growing in Chile. A recent reform aimed at reducing inequities in health care in the country, but the gap between social groups continues to grow. We aimed at exploring the existence of under-diagnosis of type II DM in adult population in Chile. **METHODS:** Secondary analysis of cross-sectional Chilean Health Survey 2009-2010 (n=4767 adults, weighted sample: 13,347,316). We compared the proportion of adult population self-reporting type II DM against the proportion with altered fasting glycaemia (value >126mg/dl, Chi-square test) and then assessed the socio-demographic characteristics of those having the condition but ignoring it. For population-representative analysis we used Stata 12.0. **RESULTS:** 48.7% sample were men, mean age was 42 years (s.d.:40.8), 56.9% had middle socioeconomic status (SES), followed by high and low (18.6%, 24.5%) and 87% lived in urban areas. A 7.8% reported being diagnosed with type II DM. There was a significantly higher rate of self-reported DM among women than men (5.0% versus 2.8%) and people living in urban versus rural settings (6.7% and 1.0%). People with self-reported DM were on average 17 years older than people without previous diagnosis (mean:57.1). According to lab results, 8.4% of the total adult population had type II DM. From this group, over half (4.6%) had not been diagnosed with this condition before, representing over 280,000 people. They are mostly middle-aged men (mean age:46.6) from low and middle SES and living in urban areas. **CONCLUSIONS:** We found an under-diagnosis of type II DM among middle-aged male adults in Chile. Few recent studies report the urgent need to develop community-based strategies to enhance male use of health care, particularly to pursue screening consultations even when feeling healthy. This study supports such initiative and challenges the complex relationship between gender and SES, which could be further explored in Chile.

PDB140

OUT-OF-POCKET SPENDING AND FINANCIAL BURDEN OF PRESCRIPTION DRUGS FOR DIABETES: 2007-2010

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OBJECTIVES: To examine the changes in out-of-pocket spending and financial burden of prescription drugs for diabetes between 2007 and 2010. **METHODS:** The Medical Expenditure Panel Survey for 2007-2010 was analyzed for patients with diabetes. Out-of-pocket spending was defined as any self-reported coinsurance and deductibles, as well as payments for prescription medications that were not covered by insurance. Financial burden for prescription drugs was measured using the proportion of out-of-pocket expenditures divided by total family income in a given year. Expenditures for each year were adjusted using Consumer Price Index. **RESULTS:** The out-of-pocket spending for prescription drugs for treating diabetes was dropped significantly from $232.5 in 2007 to $197.9 in 2010, while the total expenditure for prescription drugs for diabetes increased dramatically from $875.9 to $1026.3 during the same period. This declined out-of-pocket spending was observed across different age, gender, and racial groups. From 2007 to 2010, the financial burden of prescriptions drugs for diabetes increased from 0.8% to 1.1%, which was largely driven by declined annual family income ($56,139 in 2007 to $52,811 in 2010). This increasing trend was observed particularly among diabetic patients with low family income (2.3% in 2007 to 5.0% in 2010). In the contrast, the financial burden of medications was relieved for those aged younger than 18 years old (1.8% in 2007 to 0.3% in 2010). Patients receiving insulins and thiazolidinediones had higher out-of-pocket spending as well as financial burden than those used other medications to treat diabetes. **CONCLUSIONS:** Patients' drug costs were reduced successfully between 2007 and 2010. However, the financial burden of prescription drugs for diabetes increased due to decreased family income. Since the use of prescription drugs is a vital part of diabetes management, more efforts should be directed to patients with low family income in order to improve affordability of prescription drugs.

PDB141

EXCESS HEALTH CARE EXPENDITURES ASSOCIATED WITH PRESENCE OF THYROID DISORDERS AMONG INDIVIDUALS WITH DIABETES: A COST-DECOMPOSITION ANALYSIS

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OBJECTIVES: To examine the relative contribution of predisposing, enabling, need, and external environment factors to the excess health care expenditures associated with thyroid disorders among individuals with diabetes, compared to individuals with diabetes and without thyroid disorders. **METHODS:** Cross-sectional study design with data on adults over 20 years of age with diabetes (N = 4,920) from two years (2009 and 2011) of the Medical Expenditure Panel Survey (MEPS) were used. Ordinary least square regressions on log-transformed total expenditures were performed to estimate the excess expenditures associated with thyroid disorders after controlling for predisposing, enabling, external environment, life-style and need factors as defined framework of the Anderson Behavior and Healthcare Utilization Model. Post-regression Blinder-Oaxaca (BO) decomposition analysis was performed to examine the relative contribution of factors in explaining the average differences in health care expenditures between the two groups. **RESULTS:** Among individuals with diabetes, those with thyroid disorders had greater annual mean expenditure compared to those without thyroid disorders ($ 14,289 *vs.* $10,636, p < 0.001). After accounting for the predisposing, enabling, external environment, lifestyle and need factors, those with thyroid disorders had 15% greater health care expenditures compared to those without thyroid disorders. The BO decomposition analysis revealed that predisposing, enabling, external environment, life-style and need factors explained 63% of the excess health care expenditures among individuals with thyroid disorders. The excess health care expenditures between the groups was predominantly explained by need-factors (43%). Presence of cardiovascular diseases, depression, arthritis, and cancer explained the excess expenditures between the groups among the need-factors. **CONCLUSIONS:** Presence of thyroid disorders is associated with greater health care expenditures among individuals with diabetes. Co-management of co-occurring conditions may reduce the excess health care expenditures among individuals with thyroid disorders and diabetes.

PDB143

DISABILITY ADJUSTED LIFE YEARS LOST DUE TO DIABETES IN FRANCE, ITALY, GERMANY, SPAIN AND THE UNITED KINGDOM: A BURDEN OF ILLNESS STUDY

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OBJECTIVES: To compare the burden of disease attributable to diabetes expressed in Disability Adjusted Life Years (DALYs) for five European countries in 2010. **METHODS:** DALYs lost to diabetes as the sum of years of life lost and years lived with disability were estimated by gender and age using country-specific epidemiological data and global disability weights. Data from various secondary sources were combined to estimate health loss due to diabetes for France, Germany, Italy, Spain and the UK. National statistical databases were used and in case necessary, community studies were used to derive the prevalence of diabetes by gender and age group which were weighted proportionately for a national population burden of disease estimate. All identified data were adapted to the Global Burden of Disease methodology (2010) to calculate the burden attributable to diabetes. No age weighting and discounting was applied. Sensitivity to different sources of variation was examined. **RESULTS:** Germany and Italy lost the largest number of DALYs due to diabetes with 5.9 and 5.8 per 1,000 inhabitants respectively, followed by Spain (4.4), France (3.7) and the UK (2.9). The highest burden was caused by mortality due to diabetes, with the exception of the UK, for which the burden due to disability of diabetes was higher. This may be explained by the way of reporting death in the UK. Mean DALYs lost were higher for women in Germany, Italy and Spain and showed to increase with age for all countries. Sensitivity analysis in variation in disability weights and uncertainty in epidemiological data showed to have effects on DALYs lost. **CONCLUSIONS:** In spite of data limitations, the estimates reported here show that DALY loss due to diabetes imposes a substantial burden on countries. Cross-national variation in disease epidemiology was the largest source of variation in the burden of diabetes between countries.

PDB144

MATHEMATICAL SIMULATIONS OF ALOGLIPTIN-PIOGLITAZONE-TREATED PATIENTS MEETING QUALITY ASSURANCE HBA1C THRESHOLD REQUIREMENTS

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OBJECTIVES: Alogliptin-pioglitazone (alo-pio) reduces HbA1c levels in treatment-naïve Type 2 diabetic (T2DM) patients, or those inadequately controlled by monotherapy. Yet, the percentage of patients on alo-pio continuing to meet HbA1c thresholds suggested by the National Committee for Quality Assurance (NCQA) is unclear but may be important to accountable care organizations (ACOs). This analysis examined whether NCQA recognition, aligning with >40% of patients below 7%, >60% below 8%, and ≤15% above 9% HbA1c, is achievable. **METHODS:**